# THE CHEMIST

JANUARY 1950 VOLUME XXVII No. 1

**JOHN B. CALKIN, F.A.I.C.**

*Organized New England Chapter*

(See page 2)

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SCHEDULED FOR EARLY ISSUES

Toxic Materials in Industry, by Dr. Lawrence T. Fairhall, F.A.I.C.
The Increasing Responsibilities of the Chemist, by Ralph Lamenzo, F.A.I.C.
The Chemistry of Intelligence, by Dr. Edward Podolsky
Industry Looks to Education, by Dr. Frank M. Surface
An Employment Advisory Service, by Dr. W. I. Harber, F.A.I.C.
What the AIC Can Do for the Government Chemist, by Dr. J. David Reid, F.A.I.C.
What the AIC Can Do for the Industrial Chemist, by Dr. Simon Miron, F.A.I.C.
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## COVER PICTURE

John B. Calkin, F.A.I.C., director of the Department of Industrial Cooperation at the University of Maine, has been instrumental in bringing about the formation of the New England Chapter of THE AMERICAN INSTITUTE OF CHEMISTS. The AIC Council has just voted approval of this new Chapter (see page 30) which has twenty-one charter members.

Long an authority on the chemistry of cellulose, Mr. Calkin has been prominently identified with the pulp and paper industry in such phases as pulping, paper-making, converting, and the manufacture and use of chemical by-products. He also has had intimate contact with other industries such as chemicals, fats and oils, plastics, rosin, textiles, paint and varnish, and construction.

Mr. Calkin's work has involved intimate contact with problems in chemistry and chemical engineering, marketing research, and forestry. He has dealt with problems involving fatty acids, rosins, tall oil, turpentine, soaps and detergents, hydrogenation, and fire prevention engineering.

Before taking his present position with the University of Maine last year, Mr. Calkin served as an executive with the Union Bag and Paper Corporation, the Brown Company, and the Dennison Manufacturing Company. He continues to maintain his own consulting business in the pulp and paper and chemical process industries in New York.

After graduating from Haverford College in 1926, Mr. Calkin received the master's degree in chemistry the following year. He studied chemical microscopy at Cornell, pulp and paper technology at Maine, colloid chemistry and chemical engineering at M.I.T., and was Textile Foundation Fellow at Cornell from 1932-1935. He is active in several professional groups, and has written a number of technical articles.

## EDITORIAL

# How Can the Chemist Avoid Obsolescence

**Dr. Raymond E. Kirk, *Vice President AIC***

*Head, Department of Chemistry; Dean, Graduate School, Polytechnic Institute of Brooklyn, New York.*

A MAN is as old as his arteries, or so it has been said! When does a chemist become obsolete? How can the chemist avoid obsolescence? Doubtless every chemist over forty has asked himself that question. Perhaps each of us must answer for himself and in his own way. If we do so, perhaps we can stimulate more thought on the topic among our younger colleagues.

The usual admonitions come at once to our minds. Obviously, one is courting early obsolescence if he refrains from joining professional societies and attending scientific meetings. To neglect the new reference books and the new advanced textbooks is as fatal to the chemist as is the lack of lubricant to the machine. Surely no chemist will neglect to obtain and study the current monographs in his own field.

The development of specialized scientific and technological societies in the many fields of applied chemistry has paralleled the tremendous growth of the American Chemical Society. All this is but another evidence of the cooperative endeavors of chemists to prevent or retard their own obsolescence.

The great popularity of special courses of lectures sponsored by local Sections of the American Chemical Society is an added evidence that chemists are aware of the dangers of personal obsolescence.

But what of quantum mechanics and wave mechanics, and their prerequisite, matrix algebra? What of the theories of modern physics? And what of the logic of science as set forth by Northrop and others? These are only a few of the new and challenging ideas of the day. Here one finds the needs for symposia beyond those dealing with techniques! Here one feels the need for more than symposia! How can the chemist of today prepare himself for the brave new world of tomorrow? How can he avoid obsolescence?

One must be very brave to print a general prescription. Perhaps a few questions may aid in self-diagnosis. Do I ever stay away from a meeting because the topic seems outside my own field? Do I shun abstruse topics? Do I look with disdain on mundane

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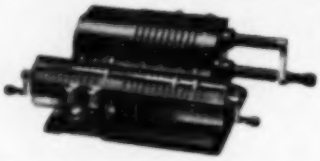

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things like market research or labor relations? Do I live in an "Ivory Lab."? Do I excuse my lack of professional awareness by talk about "do goodness"? If so, I am courting professional obsolescence.

## Hampel Named Supervisor

Clifford A. Hampel, F.A.I.C., has been named supervisor of extraction metallurgy at Armour Research Foundation of Illinois Institute of Technology. He formerly headed the inorganic technology program of the ceramics and minerals department. He joined the Foundation in 1946 as a chemical engineer.

## Nee to Briner Paint

John W. Nee, F.A.I.C., has been appointed vice president and technical director of the Briner Paint Manufacturing Co., Inc., Corpus Christi, Texas. He was formerly technical director of the Napko Paint and Varnish Works of Houston, Tex. He is the author of several papers on surface coatings for the Gulf Coast Petroleum and Chemical industries.

## Heiberger Joins Atlas Powder Company

Philip Heiberger, F.A.I.C., has been appointed senior lacquer chemist of the Stamford, Connecticut, branch of Atlas Powder Company's Industrial Finishes Department. For four years, he was with R. L. Evans Associates, chemical consultants, and later with a large eastern manufacturer of industrial finishes. He is a graduate of Brooklyn Polytechnic Institute and holds the M. A. degree in chemistry from Cornell University.

## Sauchelli Elected Chairman

Vincent Sauchelli, F.A.I.C., director of agricultural research of The Davison Chemical Corporation, Baltimore 3, Maryland, was elected chairman of the Division of Fertilizer Chemistry, at the meeting of the American Chemical Society in Atlantic City, September 19th to 21st. He presented a paper before the meeting, on "Sulfur in the American Fertilizer Industry."

# A Challenge to Medical Research

**Dr. Herman J. Schneiderwirth, F.A.I.C.**

*Research Associate, Sharp and Dohme, Inc., Philadelphia, Pa.*

(Those fortunate chemists who work in biological and medical fields can extend the "Golden Age" of medicine.)

STRANGE as it may seem, outstanding progress in practically all fields of human endeavor comes in waves. In medicine, research is carried on at all times with the same devotion and determination. Yet, there are long, lean years when nothing of importance is being discovered. Then, all of a sudden, some men working among their test tubes and bending over their microscopes, lift the veil off some previously unknown but vastly important facts. When this happens, often the whole front of medical research becomes productive again after a period of relative sterility. Almost simultaneously and often independently, new, additional discoveries are being made.

We have now entered such a period of abundant fertility in medicine. Scientists and the world as a whole are looking ahead, wondering how far we can reach—this time!

Three men, almost simultaneously, touched off this new era with a spark of their genius. Their names are well known: Gerhard Domargk, Sulfonamide; Rene Dubos, Tyrothricin; Alexander Fleming, Penicillin. To this international triumvirate, mankind is indebted forever. Mainly through their work, the frontiers of medicine have been pushed ahead and are now moving at an almost bewildering pace.

This realization is a challenge to all those who take an active part in the advance of medicine. The latter today travels along highways and byways that are comparatively new. This makes it imperative that we must reexamine and scrutinize our former conservative approach to the solution of many medical problems. In the light of these new discoveries and the trail of events they brought on, some of our previous thinking becomes obsolete. True, the old, conservative training still stands as a solid foundation, yet, some of its concepts are outdated and must be revised.

### Biological Approach in the Vanguard

It did not come as a surprise that a biologic approach to the solution of many medical problems would score heavily in the present advance; "coming events cast their shadows before."

Two decades or so ago, medical progress had become somewhat sluggish. Based upon a more or less empiric approach, it dragged along. Today, we breathe easier, because some of those shackles have been cast off and our horizon has been broadened, if not altogether changed, by a new, enlightened biologic approach. During the recent past, our scientific vocabulary has been expanded and enriched with expressions and words that have a profound meaning in regard to present and future scientific developments in medicine. Some of these words and expressions were known before but lived a rather sedate life. Their exact meaning was often only understood by biologic specialists. Today, they have come to the fore and are known to and understood by many other scientists. They have also produced many offsprings which have tentative general names, awaiting their final terms after their specific functions are better understood.

To quote only a few, competitive inhibitors, metabolic antagonists, suppressor and replacer substances, antivitamins, antiferments, enzymes and coenzymes, activators, and so on, express one of the very important trends of the medical research mind today.

The latter concentrates on a better understanding of the complex, biological mechanism that rules the birth, growth, and death of a living cell. What happens during its span of life, is of paramount importance. The recent advances made in this direction have been encouraging and are a spur to penetrate further into the understanding of many, still unsolved, mysteries.

Living cells depend for their existence and growth upon a great variety of substances. Most of these are taken by the body from our daily food. These are vitamins and minerals, as well as substances that are produced by the body in the course of food digestion and utilization, such as aminoacids, enzymes, and others. In addition, there are also some that are created within the body by its ductless glands. These are known as hormones.

At the present state of our knowledge, a cell cannot live efficiently unless all of these substances are made available to it in definite quantities and proportions to each other. When one of these is missing or present in too small or too large a quantity, trouble starts. The cell becomes sick, its normal functions are inhibited and it eventually dies prematurely. Sometimes, but this is still a disputed question, it will be converted into an outlaw, a wildly growing, uncontrollable, rather primitive cancer cell. Assuming that this does happen, one then could logically conclude that at least one of the causes of cancer growth is a partial or complete destruction of some of the biochemical production centers in the body of a

cancer patient. Through this defect, the latter has lost its ability to provide vitally needed cell substances and thereby becomes defenseless against malignancy.

If, for instance, the production of hormones or enzymes, or the assimilation and proper utilization of vitamins or other important biofunctions in the body become defective, the birth and growth of cancer cells are encouraged. In a healthy body, who has perhaps an abundance of all these vital substances at its disposal, cancer growth evidently cannot develop. One could now contemplate, that at a time when through a temporary lack or imbalance of vital substances, some cells show a tendency to degenerate into cancer cells, the healthy body would mobilize its defense forces and rush needed vital cell material to the danger spot. There it would support the weak, and replace the missing cell substances, thus preventing degeneracy. Such a biomechanism could perhaps be compared with the movement of luekocytes as a defense against threatened bacterial invasion, although the latter's mode of action is quite different. This conception can be widened and the following question may be asked! Would we not perhaps be able to obtain some of these *possibly* anticancerogenic, vital cell substances from a healthy animal body? The first step would be to obtain the highest possible storage of these substances in the animal body. This could be accomplished by a prolonged diet, abundant in all substances available today and known to play a vital role in the functioning and reproduction of healthy body cells. Possible other ways, for instance, parenteral introduction of such substances, should also be considered. The second step would be a stimulation of the animal body to excrete these substances, for example, into the urine. The kind of stimulation needed would perhaps present a major problem. Once such excretion has been obtained, the substances could be isolated, purified and investigated by parenteral introduction into the cancer patient.

It must be emphasized that these thoughts are purely speculative and are presented only as a possibility and perhaps as a challenge.

The biologic approach in medical research received its most important impetus through the discoveries of the three scientists mentioned before. Their so-called "antibiotics" interfere with vital functions of pathogenic bacteria and destroy them without evident damage to the healthy body cells. It has been proven experimentally that the Sulfanilamides deprive the bacterial cell of a substance known as para-aminobenzoic acid, which is needed for their existance. They supplant this substance in the bacterial protoplasma by putting themselves into its place. This is accomplished because the substitute has a similar chemical structure as

para-aminobenzoic acid. It plays the role of a competitive replacer substance. The bacterial cell evidently accepts this replacement unsuspectingly and is destroyed by it.

The mode of action of Penicillin, Tyrothricin, and similar substances is not yet understood. However, many scientists believe that they exert an action similar to the Sulfonamides, namely, taking away, replacing or altering substances essential to the survival of bacteria.

It is evident that these comparatively new conceptions are of great importance. Their full understanding may not only lead us to the complete conquest of infectious diseases but may also contribute to, and perhaps solve, the still unknown and baffling problem of cancer control.

### Cooperation Not Enough

Cooperation, in the complex pattern of specialized groups that work together for a common goal in medical research, is taken for granted. Without it such an organization could not survive. Yet, it appears that mere cooperation is not enough to accomplish the most. What is needed above that, is a full understanding of the present, modern concept of medical research, by every individual member of all specialized groups. It is only human that a specialist think in terms of his own, rather narrow, yet important field. This leads, often subconsciously, to a narrowing of his mind, which is undesirable, mainly for two reasons. First, it must be realized that we do not move ahead in special groups but rather as a solid entity. Second, experience has shown again and again, that those who are not specialists in a certain field but know enough of, and are keenly interested in it, will enjoy conversing with a fellow scientist about the latter's special problem. Such discussions are of great value because they sometimes convey ideas and thoughts to the specialist which make the latter wonder why he himself did not think of this before. Such an occurrence is not at all surprising, because, often, a too intense concentration on a special problem makes one overlook the simple and direct approach. An "enlightened outsider" not infrequently sees it, because his mind is detached and uninhibited.

It is obvious that such a mutual help will flourish most in those research organizations in which the largest number of individual members have acquired a broad knowledge of all its different specialties. Such broad knowledge, however, cannot be obtained by reading occasionally some articles dealing with a special field. It has to be acquired through constant study. It is so-called post-graduate work which must and gladly should be taken out of our leisure hours. Only if we do this, can we contribute the most to the accomplishment of a great deal.

### The Challenge

The present advance in medicine must be sustained, strengthened and expanded. Science and the arts have experienced their golden ages before. These come in waves and subside in waves. Today, we have entered a golden age of medicine. To hold on to it as long as possible is a real challenge, which can only be met by enlightened cooperative efforts of all those who take an active part therein. We must reach out as far as possible before the tide turns, because as time goes, the tide inevitably will turn. This thought, however, should not concern or sadden us today, for we know that progress never stops. It is eternal in its undulate evolution, because it is the very essence of our lives. Without it, life would slowly ebb away and finally die.

The challenging question of today is: How far can we reach out this time? "There is a tide in the affairs of men which, taken at the heights, leads on to victory." "Carpe diem!"

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### SASI Appoints Director

Dr. Stewart J. Lloyd, F.A.I.C., president of the Southern Association of Science and Industry, Inc., 5009 Peachtree Road, Atlanta, Georgia, announces that the first director of the association will be H. McKinley Conway, Jr., of Alabama, holder of two engineering degrees from Georgia Tech, author of numerous scientific works, and a leader in the movement to improve Southern technology. The prime objective of association is to promote Southern economic development through the application of scientific methods. The secretary of the society is Dr. George D. Palmer, F.A.I.C., head, Department of Organic Chemistry, University of Alabama.

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Dr. V. I. Komarewsky, F.A.I.C., professor of chemical engineering and director of the Catalysis Laboratory at Illinois Institute of Technology, spoke before the Danish Chemical Society in Copenhagen, in September, on the "Catalytic Reaction of Hydrocarbons."

## Cooperation Between Colleges and Industry

The American Institute of Chemical Engineers, at the forty-second annual meeting, Pittsburgh, Pa., December seventh, heard a number of speakers urge more close cooperation between colleges and industry. J. C. McKeon, manager of University Relations, Westinghouse Electric Corporation, stated, "The specific qualifications sought by the modern business world are technical competence, the desire to get ahead and an ability to deal with people . . . Colleges must provide young men with these qualities through small-scale experience on the campus. Industry must bridge the gap between these small duties and the problems of the business world."

Dr. Webster N. Jones, dean, School of Engineering and Science, Carnegie Institute of Technology, thought that neither industry nor the college was doing enough for this young graduate in the critical years following graduation. He pointed out, however, that "formal education cannot continue forever, but industry must train the technical man on the job and encourage the highest professional standards." A. J. Johnson, vice president, Shell Development Company, stated that petroleum companies prefer to instruct employees in the various techniques, but expect the colleges to provide trained men, well versed in fundamentals.

## Pennsylvania Studies Air Pollution

The Bureau of Industrial Hygiene of the state of Pennsylvania has undertaken an intensive program to study the problem of polluted air. A unique field laboratory is being built for the Bureau, at the Mine Safety Appliances Company, Pittsburgh, by which air pollution surveys will be made. The new Air Pollution Division will be in charge of J. S. Sharrah, with headquarters in Harrisburg.

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## Albert With Wheaton Company

John R. Albert, M.A.I.C., previously head of the North Carolina laboratories of the Duplan Corporation, is now working in the Electronics Department of the T. C. Wheaton Company, New Jersey.

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## New York Office

Central Scientific Company announces the opening of a new office at 347 Madison Avenue, New York, N. Y., to facilitate service in that area on scientific instruments, laboratory supplies, and chemical reagents.

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Dr. Raymond B. Seymour, F.A.I.C., executive vice president and technical director of The Atlas Mineral Products Company, Mertztown, Pa., announced that A. Myles Younger has been elected vice president in charge of sales.

# The Human Side of Research and Invention

**Dr. Harry L. Fisher, Hon. A.I.C.**

*Director of Organic Chemical Research, U.S. Industrial Chemicals, Inc. Baltimore 3, Maryland.*

(An abstract of a talk given on the occasion of the Presentation of Honorary Membership, A.I.C. to Dr. Fisher.)

HOW DO inventions and discoveries come about? Out of thin air? From necessity? By way of inspiration, guess, or the scientific hunch? What are the necessary or desirable conditions of the mind or environment that make for a useful discovery?

The answers to these questions are as diverse as the human beings who make the discoveries. Good health, good rest, selected reading, stimulating conversation, enthusiasm, all contribute to the making of an alert mind. The inspiration is very definite and when it comes, even the physical environment is fixed in the mind of the inventor. Sometimes the mind is so engrossed with the subject that it apparently solves some problems while the inventor is asleep. Discoveries often depend on chance happenings.

In order to illustrate some of the conditions, the following instances were cited in the field with which the author is most familiar, that of rubber: Thomas Hancock's cut sheet rubber and masticator; Charles Goodyear's discovery of vulcanization; George Oenslager's discovery of organic accelerators; the discovery of non-accelerating antioxidants by H. A. Winkelmann and Harold Gray, and the discovery by J. R. Katz that stretched rubber gives an X-ray diffraction pattern indicating crystallinity or definite orientation of the rubber particles.

*—Ing-John*

# Dr. Harry Linn Fisher

**Marc Darrin, F.A.I.C.**

*Chairman, Baltimore Chapter, AIC*

(Excerpts from the address made at the presentation of Honorary Membership to Dr. Fisher, Nov. 16, 1949).

DR HARRY L. FISHER is known for his outstanding work on synthetic rubber, but there is another side to his researches, the human side. He is very modest in crediting his honors to his co-workers. He greatly values the collaboration of his associates, and the exchange of thoughts with his many friends. His brilliant leadership in the direction of research may be described as resting on four pillars.

## The Four Pillars of Successful Research

*New Approach.* First he has an imaginative approach in the selection of objectives, which is the most difficult and elusive part of the job.

*Exploration.* Next he has explored in breadth according to a methodical program of single variables, but not disregarding fascinating intuitional ideas which may not fall within the customary pattern of systematic approach.

*Depth.* The third pillar is execution in depth. In this lie the disappointments; and the danger of loss of interest cannot be ignored. A remedy is the principle of dual approach as suggested by Dr. Weigand.[1] Obviously, Dr. Fisher never lost courage or was troubled with ennui.

*Incentive.* The fourth member of this research structure is the incentive which unleashes the hidden springs. This is largely an individual matter, ranging for different men all the way from salary to spirit of adventure and search for pure truth. It would be helpful to both the employer and the chemist to know more about this almost imponderable subject. Salary is important, but this goes largely to taxes, the butcher, the grocer. That which cannot be taken from a man seems to be a deeper urge —identification of his accomplishments with his name. Another important human factor is the quality of leadership, freedom of action, freedom to succeed, and freedom to fail,[2] to take a good swing at the ball without penalty if he should strike out[3]. In

(1) Baltimore Chapter, AIC, round table discussion of W. B. Wiegand's paper on Motivation in Research, held at Chapter's Oct. 1949 meeting. (Reference: Chem. & Eng. News 24, p. 2772, Oct. 1946).

(2) Reference: Wm. B. Given, Jr., "Freedom within Management," Harvard Business Review, 1946 summer edition, p. 427-437.

(3) J. K. Louden, "Principles and Problems of Industrial Organization," address to Baltimore Chapter of SAM, Oct. 14, 1947.

these matters Dr. Fisher again met the test, both as research worker and director.

### Human Factors

In still a different category is the influence of personal contacts. Too much weight cannot be given to the importance of these contacts, both within and outside of an organization, and I feel that Dr. Fisher's accomplishments are in no small measure due to an understanding of these very human factors.

### High Lights of Dr. Fisher's Record

After obtaining the doctor's degree from Columbia in 1912, he taught at Columbia and Cornell for seven years. This was followed by seven years of research for B. F. Goodrich Company at Akron, and ten years with U.S. Rubber Company. In 1936, he joined the research staff of U. S. Industrial Chemical Company, of which organization he is now director of organic research, located at Baltimore.

Dr. Fisher is the author of about forty patents chiefly in the field of rubber technology: rubber isomers used in the Vulcalock process for attaching rubber to metal, rubber accelerators, rubber derivatives and non-sulfur vulcanization. He has been a prolific writer of technical articles, particularly in relation to the chemistry and technology of rubber. He is the author of two books, *Laboratory Manual of Organic Chemistry*, and *Rubber and Its Use*.

He is a member of many technical and scientific societies and has been the recipient of special honors and awards. To mention a few: member of Franklin Institute, Marburg award of ASTM, Modern Pioneer award of NAM, Fellow Institute of Rubber Industries of Great Britain, Charles Goodyear Medalist of the Rubber Division, A.C.S., and now Honorary Member of THE AMERICAN INSTITUTE OF CHEMISTS.

### Presentation

Dr. Harry Linn Fisher, F.A.I.C., by authority of President Lawrence H. Flett of THE AMERICAN INSTITUTE OF CHEMISTS, and in the name of the Baltimore Chapter, I present to you this certificate of Honorary Membership, and introduce you as speaker of the evening to this gathering of INSTITUTE members and guests.

Sidney D. Kirkpatrick, F.A.I.C., vice president of McGraw-Hill Publishing Company, spoke October 24th, before the Sixth Annual Research Supervisors Conference held by Hercules Powder Company. He related some of his experiences in the chemical industry and emphasized the value of books in developing new chemical products. The conference was opened with a welcoming speech by Dr. Emil Otto, F.A.I.C., Hercules director of research.

# Communications

## Success Requires Vision

To the Editor:

I could not help but think, after reading the article on page 467 of the December issue of THE CHEMIST by an Assistant Professor of Chemistry at Pratt Institute, that it would be well for all extroverts who have a chemical education to read some recent surveys which indicate that the current graduates of technical schools are far more interested in security and working in desirable surroundings than they are in striking out for themselves in the manner of our pioneer ancestors.

You might tell Mr. Nechamkin, some time for me and for a lot of fellows like me, that sometimes it pays to work in unsatisfactory surroundings which eventually bring a small business into a big one. In other words, to be a success, you require vision besides comfort.

—Ralph H. Everett, F.A.I.C.
Executive Vice President
M. J. Merkin Paint Co., Inc.

## The Scientific Method

Speaking to student engineers at Princeton University, T. A. Boyd, consultant to General Motors Research Laboratories, told how the willingness to try the unexpected enabled the late Thomas Midgley, Jr., to discover Freon, the non-poisonous, non-explosive refrigerant. Midgley, after study, concluded that fluorine was the only element not already used in a refrigerating gas that could conceivably yield a compound boiling low enough to be a refrigerant. But everybody knew that fluorine is extremely poisonous and corrosive. The acid of fluorine will not only eat your hands, it will even dissolve glass. Though Midgley knew this, his characteristic daring and drive made him proceed. He and his helpers succeeded in making a compound of carbon, fluorine, and chlorine with a sufficiently low boiling point. They injected this gas into a chamber containing guinea pigs.

To Midgley's amazement, the animals survived without harm in an eighty per cent concentration of the gas. A second batch of the new refrigerating compound was tried. The guinea pigs died. Why had the animals died this time and not before? Then they found that there was an impurity in the second batch of the new compound. That impurity was phosgene, the poisonous gas of the first World War. It was the phosgene which had killed the guinea pigs. If the second batch of gas had been used first, no one would have thought to look for the impurity because everyone expected the new refrigerating gas to be poisonous. That was the narrow margin by which an im-

portant and valuable discovery was made. Freon turned out to be so completely non-toxic and so free from fire hazard that it is now generally used in air conditioning and domestic refrigeration systems.

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To the Editor:

This issue (THE CHEMIST, August, 1949) was very enjoyable and I read it cover to cover.

—Dr. Oliver S. Plantinga, F.A.I.C.

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To the A.I.C.:

I eagerly anticipate the arrival of THE CHEMIST to keep me abreast of chemical developments and activities.

—Jane B. Greenwood, A.A.I.C.

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## Reprinted

The article, "Some Factors Affecting Success," by Dr. Cary R. Wagner, F.A.I.C. in Vol. XXV, No. 11, of THE CHEMIST, has been reprinted in the April 1949, issue of *The Amalgamator*, journal of the Milwaukee Section of the American Chemical Society.

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## West Coast Considers Chemical Processing

"Seventy-five to eighty per cent of Pacific Coast imports are basic raw materials needing refinement, cleaning and other forms of processing," Marcus W. Hinson, exposition manager of the Pacific Chemical Exposition, stated recently. "Fibers, vegetable oils, crude drugs, ores, metals, minerals, gums, balsams, resin—these and many others are sent to old, established houses in the East and Gulf States for processing, even though eventually they are to be returned here for use or export. To many in Western chemical industries, this appears to be a needless waste of time and money, and a deprivation of a large potential industry for the West."

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## Branch Office Opened

Dr. Robert S. Aries, F.A.I.C., announces that the consulting engineering firm of R. S. Aries & Associates, of which he is president, is opening a branch office in Stockholm, Sweden, headed by Sven Telenius, to handle consulting work in the Scandinavian peninsula. Its address is P.O. 3260, Stockholm.

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The Dow Chemical Company has opened a new sales office at 161 Spring Street, Atlanta, Georgia, headed by Leroy C. Stewart.

# The Chemist Looks at World Chemical Developments

**C. C. Concannon, F.A.I.C.**

*Chief, Chemical Branch, Office of International Trade*

(A paper presented before the Pacific Chemical Exposition, San Francisco, Calif. Recommended as a survey of what chemists are doing around the world at the beginning of this New Year.)

OUT of the industrial displacement and chaos caused by war, the chemical industry of the world is rapidly re-emerging. No industry, with the exception of steel, is more vital to a nation's economic welfare. Chemicals are basic to all production.

So radical are the changes which chemistry has made in production methods during the first-half of the twentieth century, that these fifty years have earned the sobriquet of "The Chemical Age." Indeed, the "Atomic Age," into which we were plunged with Hiroshima, is but a subdivision of the Chemical Age.

Chemistry is, therefore, a principal element in both peace and war. The nations of the world are doing their utmost to rehabilitate their old chemical industries and, in those instances where they were formerly dependent on outside sources for essential chemicals, to establish new industries which will help them to be chemically self-sufficient.

### United Kingdom

Having gained the place formerly held by Germany, the United Kingdom now ranks second to the United States in world chemical production and is making an intensive effort to enter all world markets. Large sums are being spent on research by leading firms, and great attention is being paid to improved methods of production and the manufacture of new chemicals. The chief fields in which British industry plans to expand are in the manufacture of dyes, alkalies, sulfuric, and phosphoric acids, and the production of acetone and alcohol from petroleum.

Though all details of the various expansion programs cannot be reviewed here, the Imperial Chemical Industry plant at Wilton may be cited as an example. This plant, when completed, will be a composite chemical factory which will carry on a great variety of chemical processes. Its site covers 2,000 acres which is expected to accommodate most of the company's major developments in future years. Its construction and equipment will involve an expenditure of £22,000,000. The first two units to come into operation were the plants of the Plastics Division which make phenol-formaldehyde

powder and an acrylic resin specialty known as "Perspex."

The cracking plant, when completed, will produce the two important products of ethylene (the raw material for polyethylene and ethylene glycol), and propylene, which will pass through pipelines to the nearby plant at Billingham for conversion into acetone via isopropanol. Other products to be piped to Billingham will be hydrogen, butane, and methane.

Another activity at Wilton will be the manufacture of chlorine and caustic soda. The present output of alkalies in the United Kingdom is sufficient for domestic needs, but not sufficient to meet the requirements of the export market at which the British aim. United States exporters who have already felt the pinch of British price competition are well aware of the situation created by Britain's increased activity in the alkali export field, and can expect the squeeze to be even tighter as a result of the devaluation of currencies. The actual capacity of the chlorine and caustic soda plant has not been revealed, but by 1953 the overall expansion program, estimated to cost £13,000,000, is expected to increase the United Kingdom's production capacity by 50 per cent—a prospect which U.S. alkali exporters should not consider lightly . . .

Another major British project is the plant of Petrochemicals, Ltd., at Partington, scheduled for immediate completion. This company, formed jointly by the Anglo-Iranian Oil Company and Distillers, Ltd., plans to manufacture more than sixty intermediates for the textile, pharmaceutical, paint, rubber, ink and other industries. Some of the chemicals which it is to produce will be marketed on a commercial scale in the United Kingdom for the first time.

A third project is the new £4,000,000 chemical solvents plant constructed by the Shell interests at Stanlow. Here, there has recently been opened a petrochemical refinery which will attempt to meet the growing demand for petroleum-derived chemicals, which, up to the present, have been obtained from coal, from fermentation process, and from imports from the United States.

### Devaluation

At this point devaluation should receive more than a passing reference. Undoubtedly the reduction in currency values in Britain and on the Continent will serve to strengthen our competitors. Despite this, it is not anticipated that it will have any profound effect upon our trade with the United Kingdom, nor is it expected to result in sizable inroads into our domestic market. The decrease which is bound to occur in our exports to the United Kingdom will be due far more to the reduction of ECA assistance to Britain and to the rebuilding and expansion of the British chemical

industry than it will be to the devaluation of the pound.

On the other hand, the situation with regard to "third markets" may be different. The United Kingdom has gained a distinct advantage over us in exporting to other countries. It can operate in a price zone between a $2.80 and a $4.03 pound. Where feasible, it can maintain its former prices and enjoy a significantly greater return. Elsewhere, price levels can be varied as competitive conditions warrant. The big problem which devaluation has placed in our laps is, therefore, a "Third market" situation wherein the advantage and strategy rest largely in the hands of British competition.

**Occupied Areas — Germany**

Let us look at the significant growth of the chemical industry in that old chemical leader, Germany. Formerly second in world chemical production and trade, Germany has emerged from the havoc brought to it by war and has made substantial progress toward recovery. Over-all chemical production in 1949 was at levels approximately 85 to 90 per cent of prewar chemical production. As an exporter of potash, it is re-entering world markets on a growing scale. Thus far, its principal markets are in Europe and Japan, but as the volume of potash exports increase, it is highly possible that the former volume of shipments to the eastern United States may be re-established.

In the dye industry, Germany—strong on research—has always been a leader, and because of the close relationship between dye manufacture and the production of certain commodities essential to warfare, the level of German dye production is a matter of international concern. Relatively few other countries are important producers of dyes, since their manufacture demands not only considerable experience and technical skill, but favorable government policies as well.

Following the war, the centralized organization of I. G. Farbenindustrie, foremost of the important German dye producers and formerly the most powerful industrial group in Europe, was broken up—12 units are in the British Zone, 7 in the American, 4 in the Soviet, and an unknown number in the French Zone.

Eighty-five per cent of Germany's prewar dye output was produced in the areas now occupied by the United States, the United Kingdom, and France. The present outlook, based on ECA estimates, is that this area will manufacture about 30 per cent less in 1952-53 than it did in 1938 and that 50 per cent of the amount produced will be exported.

With respect to dye production throughout Europe, it is significant to note that if the ECA countries attain the goals they have set, the expanded industry will, by 1952-53, have a capacity over its 1938 operations and exports will be considerably increased.

If this expansion actually occurs, United States exporters may lose some important foreign markets.

### Occupied Areas — Japan

As of June, 1949, the Japanese chemical industry was operating at a rate 14 per cent higher than its rate for the base period, 1930-1934, and continuing efforts are being made to raise the general level of production. Exports of chemicals fell short of prewar marks, but the ratio of chemical exports to total exports is greater than it was before the war. In 1948, chemical and drug shipments from Japan were valued at approximately $8,500,000. Prior to the war, it produced many low-priced dyes, exporting about 30 per cent of the output. Although production is now small, it is expected to reach prewar levels in 1952-53. Evidence of increasing activity by Japanese exporters is found in their competition in the Far Eastern alkali markets and in the fact that their exports of iodine are once more available in the United States.

### India and Pakistan

Prime Minister Nehru's visit to the United States emphasized the rapidly rising importance of India and Pakistan in world chemical developments. India, in addition to being our best Far Eastern market for chemicals in 1948, is, herself, engaged in a postwar development of chemical industry which will bring it to the point where it can supply some of the commodities the country so desperately needs. Of first importance to the country's welfare is a greatly increased food crop. To this end, India is intensifying her production of fertilizers. An example is the new fertilizers plant at Sindri on which technical assistance was sought from several countries, including the United States.

Heavy chemical industry is still in its infancy in India, and alkali production—which needs locations where coal, salt, and lime are found in close proximity in order to operate economically—does not function effectively. However, both the Indian government and private enterprise have demonstrated a marked interest in the importance of the development of the country's chemical industry.

Similar interest has been exhibited in Pakistan where a large industrial alcohol plant and various other undertakings in the field of chemical production are contemplated, among them being an ammonium sulfate factory for which United States, British, and other foreign firms have been engaged to submit plans.

### Point Four

Point Four of the President's inaugural address suggested increased investment of American capital (private capital), protected by the Government, in the development of areas throughout the world not yet industrialized. The ultimate success of the plan not only requires the consum-

mation of a coordinated and long-range program, but relies in large part on the export of American know-how and technical assistance. Though the value of these items is not measurable in export dollars, their exportation is usually followed by shipments of materials and equipment produced in the United States. Under such a program, we could expect decisive changes in the industrial development of the world.

### Foreign Trade

The United States is the greatest producer, exporter, and importer of chemicals and allied products. Moreover, the experience gained by our chemical industry during the war has put us in a sound position for future growth. We possess certain great advantages, a high degree of development; most modern and efficient equipment and technology, and a genius for engineering application. Despite currency and licensing restrictions encountered in various foreign countries and the greater sales competition encountered in Europe and other industralized areas, United States exports of chemicals and allied products in the first half of 1949 were valued at approximately a half-billion dollars, surpassing the value of chemical shipments during the same period of any previous year. This figure is slightly higher than the value of shipments made in the first half of the fabulous export year of 1947, and five per cent greater than the value of chemical exports during the first six months of 1948.

The big job before us is to maintain this leadership. To assure continuing prosperity for our chemical industry we must promote a large export trade, for our over-all capacity to produce chemicals is larger than our current domestic consumption and the volume of our prewar exports combined. Inevitably, after the world's pent-up demands for chemicals slacken, some commodity markets will decline, and as the expansion in chemical industry by other countries begins to materialize, it will become harder for us to maintain our position.

These difficulties, however, can be overcome by American initiative and ingenuity. Greater industrialization abroad and the entrance of many countries into chemical production can mean a greater rather than a lessened demand for United States commodities—new markets for new products.

Thus it is of the greatest importance for this country to keep abreast of significant chemical advances throughout the world. Our continuing leadership and prosperity in the chemical industry will contribute not only to our own well-being but to the economic stability of the world. And no other nation is in so favorable a position to assume and carry out this responsibility.

# The Outlook for Chemists in 1950

**Tom Coffer**

*Employment Counsellor, Chicago, Illinois*

(Presented at a recent meeting of the Chicago Chapter, AIC.)

IT was somewhat perplexing to decide how to treat this topic. I had considered developing a paper from statistical materials, when a news item struck me as so novel and so exciting to the imagination that I was driven to abandon the plan of working along statistical lines. The news story which startled cold figures from my mind was to the effect that some gentlemen in India had been soberly discussing the advisability of including in a new constitution for that country a provision for their government to have authority to regulate interplanetary travel. This started me to thinking that while such a proposal may be a little premature, the prospect which it opens up becomes every day less fantastic. To me the outlook is exceptionally bright, but I am expected to state why I think so. That was the problem; how to present my view, and I concluded that it would be dreary to wade through statistics at a time when the possibilities for scientific advancement are so enthralling. I do not propose to indulge in prognostication. It would be rash for an amateur to venture into a field where radio commentators perform so entertainingly. Instead, I will state briefly what seems to be the trends in chemical employment.

The outlook for the chemist will be discussed in terms of the economic interest of the individual chemist, and the relationship between this topic and the general economic picture, and the relationship in turn between that and the current trends in technological progress. There is something of a tidal quality about economic forces which brings to mind the analogy of a storm-tossed ship. Our economic ship glided easily under full sail with favorable winds for eight years, but we recently ran into an adverse squall. We are in a welter of confusion with our decks awash, gear breaking loose, and rigging all fouled up. But we are not in such trouble as we cannot handle, and we are not going to founder. There is need of alert activity. The ship still answers to the helm. Pretty soon sail will be shortened, loose gear lashed down, water pumped out and ballast trimmed. When things are ship-shape we shall be able to get back on our course.

There is no point in denying that

the business of the nation has presented a dismal picture during the past months, but our economists all agree that we have been going through a period of adjustment that was inevitable, and when these adjustments reach completion, our economy will forge ahead on an even keel.

### Opportunities Ahead

Most recent setbacks have been caused by the steel and coal strikes. Many organizations were forced to retard their planning, and some were even confronted with the unpleasant necessity of temporary lay-offs. Because of these setbacks, some of our people look forward to 1950 with a degree of temerity which is unwarranted. There is still a pent-up demand for manufactured goods of every description, but that demand is going to be catered to in an atmosphere of the keenest competition. On every hand, I see phenomena to justify the expectation of good business, not just for the coming year, but for many years ahead. Consider the problem of our nationwide housing shortage. Consider the industrial implications of the stepped-up demand for protection of the health of the nation. Take a look at the many programs currently being evolved as a result of grave concern over our national security, and look at the many state projects coming up on highway construction and repair. The fifteen billion Federal housing program has not had a chance to gain momentum this year and its real benefits will not be released until 1950. Particularly significant for people in the chemical field is the current military emphasis on all aspects of chemical warfare. The newspapers recently published a report of a press conference at the Pentagon in which Gen. McAuliffe, army chemical warfare chief, urged vast expansion of activity in the chemical warfare division. Paralleling this we have the Armed Forces Chemical Association at a meeting in Chicago urging close cooperation with Chicago's program of preparing its defenses against possible atomic, biological, and chemical war attacks. . It is obvious that the army must utilize the manufacturing facilities of private industry on any large scale program. The same may be said of any protective program, and plans must call for the employment of scientifically trained people on a wide scale. Protective programs will not be confined to Chicago, but will be developed for all our major centers of population. In the military sphere at present there is also intense activity towards the development of new light alloys for use in guided missiles, and the research work attendant on such activity cannot but have repercussions in industry. Another activity that must have significant implications for industry is the current research work on the cosmic ray as a new source of power.

General employment prospects for the coming year appear to be good, but the wind seems to be set particularly in favor of people in the chemical field. A cursory survey, made recently for my own guidance of large industrial accounts, indicates that while only a few firms are at present engaged on expansion projects in research facilities, many others have acknowledged the need for expansion, and quite a few have already made plans for such expansion in the coming year which will entail greatly increased employment of technical help. We also do business with a number of comparatively small non-commercial organizations, and I find that while they are on the whole fully staffed in their laboratories and consequently not planning any appreciable expansion, non-commercial organizations frequently lose some of their best men to industry and so they anticipate a need for replacements during the year. I find further, in going over our records, that we have opened many new accounts this year with smaller manufacturing enterprises that have not previously hired chemists. These accounts represent new opportunities, not as a rule for young graduates, but for older men with records of experience.

### Competent Chemists Needed

Now, to state the sense in which I claim that the future is bright for the chemist, it seems that the number of new workers coming into the field is in excess of those passing out, but this is an expanding field of activity and there is not a sufficiency of competent workers to exploit the opportunities of the profession. My own experience would indicate that there is a shortage of competent (stress that term "competent") workers in relation to the opportunities that come to my desk. It is commonplace that we find difficulty in placing people of mediocre talent, indifferent training, and lethargic attitude. We have hordes of them in the field who do not have too much to offer, and in a period of economic adjustment such as we have been passing through, there are not too many places in industry where such people can be profitably employed. As against that, we do also experience an embarassing delay at times in locating men of high calibre to fill positions of responsibility in industry—positions that represent ideally desirable opportunities for the right men. I might mention that it is our policy never to introduce an applicant for employment to his prospective employer until we have first assured ourselves through a screening process that he has the basic qualifications requisite to the demands of the position. I have often thought it is a great pity that there are so many young graduates in chemistry who close their books finally when they receive the bachelor's degrees. There is a great need for more men with

higher degrees, and young graduates would be well advised in their own best interests to do post-graduate work. In this connection, it is encouraging to note a substantial increase in the number of graduate fellowships being established by major industrial corporations in universities throughout the country. This is at once a highly significant contribution to the welfare of the chemical profession and an acknowledgement by industry of its dependence on the services of the chemist. It is conceded by the foremost of our business executives that any industry which neglects research is bound to fall into decline. The automobile industry, the packing industry, and the petroleum industry, to mention only three of many, all owe their extraordinary growth to the vision of brilliant men in executive positions who recognized the value of progressively applied programs in basic research.

Those who have occasion to keep in touch with current trends through the trade journals, cannot fail to be impressed by the reports appearing month after month of concerns expanding their research facilities.

An important announcement appeared in the press recently of the opening of a new plant, initiating a complete new industry, the chemical wonders of animal and vegetable fats and oils. Indications are not lacking that such activities will drive for rapid expansion.

Despite the economic disturbances that have clouded up the picture during the past year, there is every reason to hope that 1950 will be a year of high promise for all people now active in the chemical field, and I feel that every encouragement should be offered to those young people who will be joining the profession this coming year.

## Civil Service Examinations

The U.S. Civil Service Commission announces that written examinations are open for Junior Scientists (Chemist, Physicist, Metallurgist) and Engineers, paying from $2,650 to $3,825. Location: Washington D.C. Maryland, Virginia, and at Wright-Patterson Air Force Base, Dayton, Ohio. Request information from first- and second-class post offices, Civil Service regional offices, or U.S. Civil Service Commission, Washington 25, D.C.

## Chemist Available

ORGANIC CHEMIST: Ph.D. 1945. Training in pharmaceutical and organic medicinal chemistry. Four years diversified experience in organic research and synthesis from laboratory through pilot plant including catalytic hydrogenations, dehydrations and acetylene pressure reactions. Prefer position in pharmaceuticals. Publications. Sigma Xi. Age 29, family. Location immaterial. Please reply to Box 10, THE CHEMIST.

# Maine Resources Conference

The University of Maine, at Orono, November fourth and fifth, assembled state officials, industrial leaders, and agricultural experts, at a Maine Resources Conference, designed to encourage the scientific development of the state's natural resources. A general session, presided over by University president Arthur A. Hauck, summarized Maine's agricultural and industrial opportunities. A panel discussion covered "Industrial Development—Management and Product Problems," led by John B. Calkin, F.A.I.C., director of the Department of Industrial Cooperation. Other panel discussions considered "Food Processing and Marketing," Soil Fertility Resources, "Wildlife and Fish Resources," and the "Utilization of Wood."

The analysis of Maine's present industrial situation was presented with the stimulating clarity of the first snow, which at Conference-end fell on the land of blue-green spruce and golden tamarack.

The speakers each brought out certain points, some of which were not always in accord with the opinions of others who spoke or participated in the discussions. In summary, one-third of the 385,000 persons who work in Maine are engaged in manufacturing. Thirteen-hundred of the 1635 manufacturing establishments, which represent twenty industries, are classified as small business. However, three-quarters of the salaries are paid by only four industries: (1) Textile mill products; (2) Paper and allied products; (3) Leather and leather products, and (4) Lumber and its products. Maine's residents have a per capita income only slightly below that of the other New England states, while unemployment is not less than the national average. Maine is seriously concerned about losing her young people, who migrate elsewhere—11,000 persons between 1940 and 1947. It is notable, though, that few industrial establishments have left the state. To attract its young people, Maine desires to expand its industry, though two obstacles interpose: These are, the lack of basic mineral resources, such as coal, oil, natural gas, and iron: the state's location at the periphery of the nation's population centers, which makes competition difficult with other producers who are located nearer the large markets.

To overcome these handicaps, Maine must develop scientifically those resources which are in her possession: (a) An abundant supply of water in a nation which suffers from water shortages; (b) Timber, lumber, plywood, pulp, paper, wood products, "the chemistry of wood is

still in its infancy;" (c) Agriculture: Cattle, sheep; wool, leather; poultry, eggs. Potatoes, starch, alcohol. Blueberries, blueberry juice. Apples, apple syrup, cider; (d) Minerals: Granite, feldspar, manganese, clay, asbestos, diatomaceous earth; (e) Sea resources: Lobsters, scallops, clams, seamoss, kelp.

In the process of expanding industry and developing new products, the manufacturing procedures must be so efficient that the final results can compete favorably in the national markets. This requires excellent business management and lower manufacturing costs. The latter may be achieved scientifically by (1) Finding a less expensive raw material: Casein formerly used in coated papers was replaced by less-expensive, special starches. (2) Improved methods of operation: An air blade coater for coating paper replaced the former bristle brush, and thrice-increased the rate of production. (3) Improve the quality of the product. (4) Create new products: Recently a "delayed action heat seal" was developed. It is non-tacky when spread, but after heating becomes tacky and so remains for a considerable period.

Several industrial leaders reported the successful expansion of their businesses after they had secured technical research on their products. One of the speakers, Joseph Wilner, president of Wilner Wood Products Company, was especially enthusiastic about the opportunities for business development in Maine. He had not found distance to be a deterrent either to efficient selling or distribution of his products.

Such a scientific approach to the development of Maine's industry should assure the fulfilment of the words of Governor Frederick G. Payne, spoken at the dedication of the new engineering and plant science buildings of the university, "We are going farther and farther on the road to prosperity."

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# Necrology

## Charles L. Gabriel

Charles L. Gabriel, vice president in charge of new developments, Publicker Industries, Inc., Philadelphia, Pa., died September 25, 1949, of virus pneumonia while attending a chemical convention at Atlantic City, New Jersey.

Mr. Gabriel was born September 28, 1891, in New York, N.Y. He attended the City College of New York and the Massachusetts Institute of Technology, from which he received the S.B. and M.S. degrees in chemical engineering. He was successively chemist for the Electrical Testing Laboratories, the Tidewater Oil Company, the Baryta Manufacturing Company, the General Gas Mantle Company, and the Port Morris Chemical Company until June, 1918, when he became First Lieutenant in the Chemical Warfare Service of the Army, where he assisted in the production of Lewisite. In 1920, he was employed by Commercial Solvents Corporation, in charge of research and development. There he developed processes and equipment for synthetic methanol, methyl amines, high pressure hydrogenations, butyl acetate, various high boiling plasticizers, nitroparaffins, etc. He was also plant manager of the Terre Haute plant for four years, and vice president of the corporation. He joined Publicker Industries in 1943. He was the author of a number of publications and patents.

He became a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS in 1943.

## George C. Supplee

Dr. George Cornell Supplee died of a heart attack at his home in Bainbridge, Chenango County, New York, November 7, 1949.

He was proud of the fact that he was a "self-made man" who did not know for sure where and when he was born. He was certain that his birthplace was Schuyler County, New York, probably Reading Centre, near the Southeast shores of Lake Seneca. The day and month of his birth were certainties, namely December 5th, but he indicated to his friends that his birthyear was 1889 plus or minus one.

He studied at Cornell University and received the B.S. degree in 1913, the M.S. degree in 1914, and the Ph.D. degree in dairy chemistry in 1919. During the summers of 1913 to 1918, he was a dairy inspector of the U.S. Department of Agriculture.

In 1919, he became director of research for the Dry Milk Company with laboratories at Adams, N.Y., which were moved to Bainbridge, N.Y. in the early 1920's and acquired by The Borden Company in the early 1930's. During the past five years, he was owner and director of the G. C. Supplee Laboratories, Inc., at Bainbridge, N.Y.

Inspired and guided by the late Drs. Lafayette B. Mendel, AIC Medalist, of Yale University and Alfred F. Hess of the New York Jewish Children's Hospital, he became interested in the application of vitaminology to dairy products. His early publications dealt with the role that trace elements, such as copper, may play in milk and milk by-products. He collaborated with the National Carbon Company in developing methods of irradiating milk. He was awarded the Billings medal from the American Medical Association in 1936 for work on "lactoflavin," now known as "riboflavin." Recently, he received the Borden Award for meritorious contributions to dairy science.

He was a master of the English language, freely indulging in what he termed "five-dollar words." He was able to and often did dictate letters that exceeded five pages.

He was a member of the American Chemical Society, the Dairy Science Association, and the American Public Health Association. He became a Fellow of The American Institute of Chemists in 1937. He was vice president of the International Association of Milk Sanitarians from 1923 to 1925 and became president in 1925. He was the charter president of the Rotary Club of Bainbridge, N.Y. He is survived by the widow and four children by a former marriage.

—Dr. Stefan Ansbacher, F.A.I.C.

## Recommended for Professional Reading

**By Dr. Gustav Egloff, Hon. AIC**

"The Seven Freedoms," by Ed. F. Degering, F.A.I.C., Purdue University. Reprinted from Vol. 56 of Proceedings of Indiana Academy of Science.

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"Putting Research Data to Work," by Paul D. V. Manning, Vice President, International Minerals and Chemical Corporation. Reprint from *Chemical Industries,* December, 1948.

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"The Attitude of Management Toward Research," by Dr. Robert E. Wilson, Standard Oil Company (Indiana). Reprint from *Chemical and Engineering News,* Jan. 31, 1949.

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"Patentable Chemical Inventions," by Charles W. Rivise, F.A.I.C., and A. D. Caesar. Reprinted from *Journal of Chemical Education,* August 1948.

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"The Freedom of Science—Its Opportunities and Responsibilities," by Harry A. Toulmin, Jr. Reprint from *Chemical and Engineering News,* April 4, 1949.

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### December Meeting

The 262nd meeting of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS was held December 14, 1949, at 6:00 p.m. at The Chemists' Club, New York, N.Y. President Lawrence H. Flett presided.

The following councilors and officers were present Messrs. M. L. Crossley, L. H. Flett, K. M. Herstein, F. A. Hessel, L. Hoyt, R. H. Kienle, R. E. Kirk, C. P. Neidig, E. H. Northey, R. P. Parker, G. Rugar, F. D. Snell, L. Van Doren, F. E. Wall, and J. R. Withrow. W. J. Baeza, M. J. Kelley, and V. F. Kimball were present.

The minutes of the preceding meeting were approved.

President Flett reported that the INSTITUTE is showing continual improvement and that as the year draws to a close, it occupies a fine position. He asked each Councilor to start the New Year by inviting ten friends to join the INSTITUTE.

The Secretary reported that several suggestions had been sent in by the various Chapters to change slightly the proposed model constitution for Chapters. These changes were referred to the Committee on Chapter Constitutions.

The Secretary reported that the membership now totals 2412. He recorded with regret the death of Dr. E. C. Merrill on November 11, 1949.

The Secretary announced that a petition, bearing 21 signatures, had been sent to the Council requesting the formation of a New England Chapter. Upon motion, this petition was approved.

A letter was presented from Dr. Joseph W. E. Harrisson, A.I.C. delegate to the American Board of Clinical Chemistry, which is being established as a voluntary examining and certifying board by joint approval of the American Chemical Society, the Society of Biologic Chemists, and the AIC. A request for organizational funds was included. Upon motion, the Council recommended to the Board of Directors that $250.00 be contributed by the AIC for this purpose.

A proposed amendment to the By-laws of the INSTITUTE, creating an award to great educators, was presented for the second time to the Council, in accordance with the Constitution of the AIC, which requires that amendments to the By-laws shall be voted upon at two successive meetings of the Council. (The full text of the amendment appears on page 491 of the December 1949 issue of THE CHEMIST). The Secretary reported that he had received approval of the amendment from the representatives of the following Chapters: Los Angeles, Niagara, and Chicago. It was agreed that chemical educators should receive more recognition, especially those who are doing such fine, but unknown, work in the small Liberal Arts colleges. Dr. Parker expressed the doubt of the New Jersey Chapter that the creation of a new award, adding to the great number of chemical awards now made by various societies, would achieve this purpose. Dr. Crossley believed that the purpose could be achieved, more flexibly, by the award of Honorary Membership in the INSTITUTE to those who merit special recognition as educators. After discussion, a written ballot was requested. Drs. Baeza and Kelley were requested to act as tellers. The result of the balloting was: Yes, 4 votes; No, 10 votes; blank, 1 vote.

Upon motion, the Treasurer's report was accepted.

Dr. Kelley, Chairman of the Committee to Consider Certificates for Membership, reported that he had conferred with the engravers of our present certificates, and that sufficient stock remained on hand for some time. It was recommended that, as soon as the stock becomes low, the Secretary should bering up the matter again. Honorary Membership certificates, with citations, can be specially prepared as needed.

Dr. Parker reported that the New Jersey Chapter's first meetings had been successful. The Chapter is active in attempts to improve the facilities of the New Jersey State Teachers' College. It believes that members should conduct themselves in such manner as to attract new members to the AIC. The Chapter went on record as opposed to any reduction in dues rebates.

Mr. Neidig reported that the Pennsylvania Chapter will hold a meeting on January fifth, at which Dr. Walter J. Murphy, F.A.I.C., will speak on "The Challenge of Professionalism."

Mr. Hoyt reported that the Niagara Chapter's membership was equally divided between Buffalo and Niagara Falls, and that meetings are held alternately in those cities. At the first meeting of the year, James Ogilvie spoke on the history of dyestuffs. At the February meeting, the award of Honorary Membership in the AIC will be presented to Dr. Alexander Schwarcman.

Dr. Rugar reported for the Ohio Chapter. Recently a joint meeting was held with the American Chemical Society, the American Electrochemical Society, and the American Institute of Chemical Engineers. Plans are being made for greater activity in the area.

Mr. Herstein reported, that the recent meeting of the New York Chapter, a discussion was held on whether the New York Chapter should seek licensing for chemists. A vote indicated that those present were slightly in favor of it. A committee was appointed to study the matter. The next meeting, to be held January fifth, with a distinguished list of speakers, will be directed toward the interests of young chemists. The new chairman of the New York Chapter's Committee on Membership is Dr. Charles J. Marsel of New York University. The Chapter has had under consideration since last June the formation of a commercial agency to specialize in positions for chemists. This would require the formation of a corporation, and the raising of funds to establish it. Dr. Baeza discussed the formation of such an agency. During the past year, when the New York Chapter conducted a bureau for advice and assistance to chemists, over ninety per cent of the questions sent to it concerned employment. He asked that the INSTITUTE sponsor such an employment agency. After discussion,

the Council agreed in principle that it was in favor of an agency specializing in the employment of chemists, but that it was not certain that an agency such as that described could be supported under the Constitution of the INSTITUTE, because of the legal questions involved. Upon motion, it was decided to appoint a Committee of AIC Fellows, who are lawyers, to look into the legal aspects of the situation. Dr. Lloyd Van Doren was appointed Chairman.

The Committee on Chapter Constitutions was asked to review the constitution of the Ohio Chapter, which has not yet been presented to the Council.

The following new members were elected:

**FELLOWS**

**Field, Edmund,**
*Research Associate,* Research Dept. Standard Oil Co. (Indiana), Box 431, Whiting, Indiana

**Happel, John**
*Professor and Chairman,* Department of Chemical Engineering, New York University, University Heights, New York

**Horvitz, Leo**
*Laboratory Directory,* Horvitz Research Laboratories, 3217 Milan Street, Houston, Texas

**Pope, Frank B.**
*Sales Representative,* Sales Department, Sharples Chemicals, Inc. 80 East Jackson Blvd., Chicago, Illinois

**Potts, William McDaniel**
*Professor of Chemistry,* A. and M. College of Texas, Chemistry Department, College Station, Texas

**Ries, Herman Elkan, Jr.**
*Head of Physical Chemistry Section,* Catalysis Research Division, Research and Development Department, Sinclair Refining Company, Harvey, Illinois

**Shappirio, Sol**
*Patent Attorney,* 814 Washington Loan and Trust Bldg., Washington 4, D.C.

**Wilder, Austin B.**
*Manager,* Chicago Laboratory, E. I. duPont de Nemours & Company, 1025 S. Wabash, Chicago, Illinois

**MEMBERS**

**Konigsbacher, Kurt S.**
*Research Chemist,* ..Foster D. Snell ,Inc., 29 West 15th Street, New York, New York

**Leifheit, Howard C.**
*First Lieut.,* ..Medical Service Corps; *Chief,* Chemistry & Toxicology Section, U.S. Army, First Army Area Medical Laboratory, 1313 Federal Office Building, 90 Church Street, New York 7, N.Y.

**RAISED FROM MEMBER TO FELLOW**

**Mathes, Ralph Voorhees**
*Chief Analytical Chemist,* Research Laboratories, Oakite Products, Inc., 22 Thames Street, New York 6, N.Y.

There being no further business, adjournment was taken.

# Local Chapter News

## C. P. Neidig, F.A.I.C.

### Baltimore

*Chairman,* Marc Darrin
*Vice Chairman,*
Rev. E. S. Hauber, S. J.
*Secretary-treasurer,*
J. Bernard Edmonds
*Representative to National Council,*
Maurice Siegel
*Reporter to The Chemist,*
Richard B. Treash

The Baltimore Chapter met November 16, 1949, to present Honorary Membership in THE AMERICAN INSTITUTE OF CHEMISTS to Dr. Harry L. Fisher, past president of the INSTITUTE. (See pages 11-13). Following acceptance of this award, Dr. Fisher spoke on "Synthetic Rubber," a talk which provoked considerable discussion. At the previous meeting of the Chapter, October 26th, Dr. Fisher spoke briefly at the informal round table discussion held on "Essentials in the Direction of Research," his topic being "The Human Side of Research." (See page 11.)

### Los Angeles

*Chairman,* Manuel Tubis
*Vice Chairman,* Morris Katzman
*Secretary,* Romeo P. Allard
*Treasurer,* Wilfred Nobel
*Representative to National Council,*
Dr. L. F. Pierce

The December meeting was held in the Rodger Young Auditorium and proved to be one of the largest and best received. It was preceded by a very excellent dinner, followed by a "Welcome" talk by Chairman Katzman, and an introduction of the aims and purposes of the INSTITUTE by Secretary Tubis and National Councilor Pierce. After the smoke cleared, there followed a symposium on smog, which is of our local variety and usual proportions. The chairman of the symposium was Treasurer Noble, who is a member of the Los Angeles County Air Pollution Control Board and to whom the credit is due for so capably arranging this meeting. Other speakers were Arthur Hocker of the Inspection Division, who presented the regulatory point of view; Emmet P. Cushing, who presented the farmers' interest concerning crop damage, and Dr. Robert Hull of the California Institute of Technology, Plant Research Project, who presented evidence of plant damage by various atmospheric contaminants. The efforts and achievements of the cooperation of industries were also adequately presented.

A color film was shown, outlining the role to be played by an enlightened citizenery in the program.

It is of interest to note that the

Air Pollution Control Board has no chemist and but one chemical engineer on it, whereas many of its problems are chemical in nature.

The meeting brought many interested guests who became aware of the INSTITUTE and stayed to ask for further information.

Manuel Tubis, F.A.I.C., Los Angeles Chapter, has been elected a member of the Board of Directors of the Technical Societies Council, a body representing the technical and professional societies, formed for the promotion of common aims and purposes.

## Niagara

*Chairman,* James Ogilvie
*Vice Chairman,* Bert Wetherbee
*Secretary-treasurer,*
Dr. M. H. Fleysher
*Representative to National Council,*
Rev. James J. Pallace, S.J.
*Reporter to The Chemist,*
Lyle H. Mahar

The Niagara Chapter held its second meeting of the season on December seventh at the Prospect House, Niagara Falls, N.Y. Albert E. Jennings, technical personnel supervisor of the Electrochemicals Department of E. I. du Pont de Nemours & Company spoke on "Educating for Industry's Needs:"

The calibre of graduates seeking positions in the chemical industry is in the main high, with no significant distinction as to the gergraphical source of the student. Since only about seventy-five per cent of the technical graduates will accept employment in industry, it behooves industry to do all it can for these men, who will distribute about equally to produce, sell, or do research. The need for good grounding in fundamentals was stressed as all important; the need for instruction by men who know for themselves what production, sales, and research positions are like; the value of summer employment in industry; the pitfalls of mass instruction and the advantages of devices which bring the educator and student much closer so that the student relates his specialization to a world of living human beings. The fact that most positions in industry for the chemist do require working in a group emphasizes the need for better appreciation of human relations.

It was emphasized that much can be done to develop professionalism among chemists, during graduate work, as is done by medical and legal groups administering graduate courses in these fields, if our cultural pattern for the new chemists includes at each level of maturity some continuing contact with those fields in which value-judgments are of prime importance, as well as fundamentals in chemistry.

In the discussion following the talk, the following interesting items were brought out:

In seeking chemists of satisfactory scholastic standing for industry, the

employer also attempts to satisfy himself, during the interview, upon the following seven questions regarding the applicant:

(1) Is he occupationally stable? Will he not overlook important instructions?

(2) Is he uncomfortable when idle?

(3) Does he possess the persistence to follow a path to the end? Can he go beyond the limits of his training?

(4) Is he self-centered (He must not be egocentric, and should be willing to go an extra distance, if necessary.)

(5) Is he able to fend for himself and make decisions?

(6) How is his social elasticity? Can he get along with others? (Avoid sharply competitive men.)

(7) Does he regard subordinates as human beings or just subordinates? (Will he qualify for leadership?)

In attempting to find a satisfactory answer, it was felt that it was a real science to interview chemists. It is recognized that emotional immaturity is fatal to group effort in industry and that men have great skill in concealing childish characteristics.

Once the man is employed, the employer must have annual inventory with the chemist,which must be open and above board. Preferably this should be done orally with no written records.

In a large organization, aptitude tests should be given to younger men to fit them into the most advantageous spots for the benefit of all concerned.

## Louisiana

*Chairman,* Dr. J. David Reid
*Vice Chairman,* William H. King
*Secretary Treasurer,*
Hartwig A. Scuyten
*Representative to National Council,*
H. A. Levey

The Louisiana Chapter met at the AIC Breakfast, Oklahoma City, Oklahoma, held at the Southwest Regional Meeting of The American Chemical Society, December tenth.

P. H. Horton, who had organized the breakfast, introduced Dr. Mark Everett, School of Medicine, University of Oklahoma, to act as chairman and moderator of the discussion. Dr. Everett announced the subject of the Breakfast as "The Worth of the A.I.C. and What Should We Do About It?".

Dr. J. David Reid, chairman of the chapter, welcomed the AIC members from Oklahoma, Texas and Arkansas, and then spoke on what the AIC could do for the chemist in government service.

Dr. Ray Q. Brewster, chairman of the Chemistry Department, University of Kansas, gave the viewpoint of the academic chemist. He considered the AIC to be potentially helpful to the student by giving him a professional outlook. Speakers from the AIC can help the student by giving

talks, and the fact that they are members of the AIC adds prestige to the speakers while their words carry greater weight to the student. Although the AIC cannot act as an employment agency, professional men can help many of the students in their effort to obtain the proper position after graduation. Dr. Brewster expressed regret that more meetings were not available to AIC members.

Dr. Simon Miron presented the views of the industrial chemist.

Dr. John B. Entrikin, Centenary College, gave a summation of the views expressed. He said that the INSTITUTE was founded in the belief that a small organization devoted to one objective could better serve the chemist as a professional man than the larger and more general American Chemical Society. He expressed disappointment that the suggested merger of the AIC and ACS, with the former as a Division of the latter, had failed, mostly over a comparatively minor point of classes of membership. He felt that many of the members of the ACS did not understand the objectives of the AIC, particularly that there is need of a group to take care of the chemist as a professional man.

Dr. Everett then led the discussion which followed. It developed that though there was some dissatisfaction with the work of the INSTITUTE, many members anticipate further developments. Since no one will help the chemist except himself, it is necessary to encourage the INSTITUTE to be more active. The opinion was expressed from the floor that complacency sometimes develops in higher positions. It was agreed that such AIC meetings at Regional and National ACS meetings should be continued to further fellowships among AIC members and guests. Also, it gives AIC members an opportunity to attend their first AIC meeting in many cases. However, luncheon or dinner meetings would be preferred to breakfasts.

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## Street Becomes Director

Dr. John N. Street, F.A.I.C., has been named director of the chemical laboratories of the Firestone Tire and Rubber Company, Akron, Ohio.

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Harry Bennett, F.A.I.C., president of Glyco Products Company of Brooklyn, N.Y., and Natrium, West Virginia, announces that the Chicago offices of the company were moved, December 15th, to 435 N. Michigan Ave., Chicago 22, Illinois.

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## New York Chapter Meeting

Honorary Membership in the AIC will be presented to Frank G. Breyer, F.A.I.C., at a Meeting to be held February 15, 1950, at the Hotel Commodore, New York, N. Y.

# For Your Library

## Biochemical Evolution

*By Marcel Florkin. Edited, translated, and augmented by Sergius Morgulis. Academic Press, Inc.*, 1949. *VI Plus* 157 *pp.* $4.00.

Soon after the development of a New System in chemistry, Rene Hauy and others began to create a chemical crystallography. Now, nearly one-hundred and fifty years later, on the basis of great advances in biochemistry, the attempt is made to coordinate the chemistry with the morphological classification of animals. E. Baldwin's comparative biochemistry, J. Brachet's chemical embryology, J. Needham's *Biochemistry and Morphogenesis* (1942) are some of the predecessors of the book on biochemical aspects of animal evolution. "To concede that the classification of morphological groups conforms to a biochemical classification is to favor the idea that morphological and biochemical characteristics are linked together and that both are governed by the same determinism." (p 120.) This idea is highly intriguing, but it is confronted with much greater difficulties than its historical analogue in the realm of minerals. "The biochemical design common to all animals" obviously can not, at the present time, be demonstrated as according to "an evolutionary process." The examples given are far from sufficient to show clear lines of coordination. And yet, this boldly conceived program may well stimulate research in many ways. Even its present incompleteness may lead to practical applications. The search for sources of special enzymes or hormones could profit from the attempted correlation of biochemical function and zoological classification.

Scattered data on the chemistry of plants could have served to amplify Florkin's story which is here almost completely limited to animals.

A valuable list of references, a table of zoological classification which is perhaps too meagre for chemists and too obvious for zoologists, and two indexes are attached to this interesting, sometimes exciting, and sometimes disappointing, book.

—Dr. Eduard Farber, F.A.I.C.

## Elseviers' Encyclopedia of Organic Chemistry

*Edited by F. Radt. Series III, Carboisocyclic Compounds. Volume 12B, Part 1, Naphthalene. Elsevier Publishing Company.* 1948. *xxx*—344 *pp* 16*x*25.5 *cm. Price: Subscription price* $24; *series price* $28; *single price* $32.

Judging from the volumes examined so far, the reviewer considers this series a "must" for anyone doing research work on organic chemistry, possibly even more so than Beilstein, as the general set-up is such that it is easier to use and, what is even more important, it covers the literature to a later date.

The present volume covers the general literature of naphthalene up through 1944 and that concerning the structure of compounds through 1948. Data of interest to the physicist and biologist are also included. The typography is excellent and the volume carries a complete subject and formula index.

—Dr. Frederick A. Hessel, F.A.I.C.

## The Corrosion Handbook

*Herbert H. Ulig, Editor. John Wiley & Sons.* 1188 *pp.* 9¼"*x*6¼". (1948). $12.00.

The Corrosion Division of the Electrochemical Society has collected its information in a *Corrosion Handbook*. This difficult and baffling subject is handled in the form of topics by specialists. The information is up-to-date.

The book is divided into a section on Theory, Data on Corrosion of Metals and Alloys, Special Environmental Action, High Temperature Corrosion, and the important counter phase of anti-corrosion and resistance. Corrosion testing and illustrations of typical forms of corrosion, and miscellaneous information close the book. This volume is valuable to all technical men.

—Dr. John A. Steffens, F.A.I.C.

## A Concise Encyclopedia of World Timbers

*By F. H. Titmus. Tapp and Toothill, Ltd., Leeds and London. Published in the U.S. by Philosophical Library.* 1949 6"x9". 156 *pp.* $4.75.

The book was designed to be "a handy reference for all whose work necessitates a real understanding of timber. It cannot pretend to give an exhaustive study of

each wood listed . . . " The first nineteen pages give a review of the structure of wood, its identification, and definitions. This part is followed by descriptions of some 200 different, world timbers (acacia to zebrawood), with microscopic identification of many of their woods. The terminology is British. References to both British and U.S. publications are given. Within the limitations of its purpose to familiarize woodworkers and others with the world's commercial timbers, this book is both useful and interesting, especially since the commercial classifications of wood differ from the botanical classifications.

—V.F.K.

## Chemical Books Abroad

### Rudolph Seiden, F.A.I.C.

Here are some more books recently received from European publishers:

(A) Edward Arnold & Co., London (Longmans Green & Co., New York): *The Stuff We're Made of*, by W. O. Kermack and P. Eggleton. 2nd ed., 356 pp. $3.00. An illustrated biochemistry book drawing attention to selected objects of more general interest and relatively free of scientific details and chemical formulas. • *An Introduction to Agricultural Chemistry*, by Norman M. Comber, H. Trefor Jones, and J. S. Willcox. 1948, 315 pp. $2.50. A textbook on soil materials, soils, fertilizers, and animal nutrition, written for agricultural college students.

(B) Odhams Press, Ltd., London, W.C. 2: *Practical Plastics*, by Paul I. Smith. 1947, 320 pp., 10s.6d. A clear and comprehensive guide to the principles and practice of modern plastics, with over 200 excellent illustrations. • *The Great Encyclopedia of Universal Knowledge*. A host of experts compiled the material for over 20,000 entries and 1,100 illustrations used in this 1,152-page digest of human knowledge, including chemistry, physiology, medicine, law, economics, biographies of great chemists and other scientists, etc. A valuable and dependable quick-reference book for only 10s.6d.

(C) The Textile Institute, Manchester: *Fibre Science*, edited by J. M. Preston, 1949, 341 pp., 30s. The Textile Institute, dedicated to the closer contact between science and practice, published this book to bring the latest knowledge of chemical and physical problems of fibers to technologists and students who are not its members. The M.I.T.'s and F.I.T.'s had a chance to listen to the eighteen lectures given by the thirteen experts whose texts are represented in this volume.

(D) Wissenschaftliche Verlagsgesellschaft m.b.H., Stuttgart: *Pharmazeutische Uebungspraeparate*, by Walther Zimmermann. 2nd ed. 371 pp., $3.30. A textbook for students of pharmacy, dealing with the preparation of inorganic and organic (including galenic) drugs, each of which is thoroughly described and tested. • *Taschenbuch der Farben-und Werkstoffkunde*, by Hans Wagner. 7th ed., 447 pp. with 37 ill., $2.40. Addressed to all who have to do with paints and painting, this little pocket-book gives a brief survey of their working materials and techniques. • *Albertus Magnus*, by Heinrich Balls. 1947, 308 pp. with 37 ill., $2.40. Deals chiefly with the biologist Albertus Magnus (Albert von Billstaedt), 1193-1280; an introductory part is dedicated to the history of biology from ancient times to the German Middle Ages. • *Humphrey Davy and Joens Jacob Berzelius*, by Wilhelm Prandtl. 1948. 264 pp. with 23 ill., $2.30. Biographies of these two leading chemists of the first half of the 19th century who, by sheer coincidence, had so much in common in life and work.

(E) J. Ebner-Verlag, Ulm-Donau, publishes a series dedicated to research and humanity: *Parasitismus oder Symbiose?* by F. O. Hoering. 1947. 196 pp. $2.50 • *Um die Entdeckung der Energie*, by Werner Bloch. 1947. 152 pp. $2.05. A biography of Julius Robert Mayer, stressing his discovery of the energy law; the appendix contains a German translation of John Tyndall's remarks about the equivalence of natural forces (1863). • *Tragik und Triumph grosser Aerzte*, by Wladimir Lindenberg. 1948. 200 pp. $2.40. This is a stirring cultural and social history of great medical (and chemical) discoveries made between the 13th and 19th centuries. It proves that stupidity, superstition and human barbarism are stronger than fiction. A translation of this volume should be made available to American readers. • *Vision und Experiment*, with the subtitle: *Faraday und seine Entdeckungen*, reprints H. Helmholtz's German translation (1870)

of John Tyndall's famous book about his famous teacher Faraday.

*Note*: This column was written before the recent devaluation of the European currencies; therefore the dollar prices mentioned are now in most cases approximately 30% lower.

## Booklets

"Dust-Free Tester," "No. 4 Ford Type Aluminum Viscosity Cup," "Gardner Washability Machine," and "New Portable 75° Glossmeter," leaflets. Henry A. Gardner Laboratory, Inc., Apparatus Division, 4723 Elm Street, Bethesda, Maryland.

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"New Radiation Counter, combining Scaling Unit, Radiation Survey Meter, Count Rate Meter, and Containing Detector." Information sheet. The Nucleonic Corporation of America, 499 Union Street, Brooklyn 31, N.Y.

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"Micro-Set Manostat." Description. Precision Scientific Company, 3737 W. Cortland Street, Chicago 47, Illinois.

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"Toxic Eye Hazards." A manual prepared by the Joint Committee on Industrial Ophthalmology of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology. 102 pp. $1.00. The National Society for the Prevention of Blindness, Inc., 1790 Broadway, New York 19, N.Y.

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"Unitized Laboratory Furniture." 4-page, illustrated folder. Fisher Scientific Company, 717 Forbes St., Pittsburgh 19, Pa.

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"Syncro Electric Hone Sharpener," for all around sharpening purposes. Syncro Corporation, Department 346, Rochester, Michigan.

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"Bulletin on Typical Heavy Chemical plants Constructed Here and Abroad." Illustrated. The Nicoly Titlestad Corporation, 11 West 42nd Street, New York 18, N.Y.

"Research and Development in Applied Optics and Optical Glass at the National Bureau of Standards." 20 pp. illustrated. Bibliography. Price 15 cents from Superintendent of Documents, Washington 25, D.C.

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"Permel Finish and Permel 'Plus' Finish.." Textile Finishing Bulletin No. 120A. American Cyanamid Company, Textile Resin Department, Bound Brook, N.J.

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"Silicone Notes. DC 44 Silicone Grease." Reference No. D-6. Also "DC 33, DC 44, DC 41 Silicone Greases." Reference No. D-5. Dow-Corning Corporation, Midland, Michigan.

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"Employment Outlook for Engineers." Study by Bureau of Labor Statistics, U.S. Department of Labor, Washington 25, D.C.

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"The Brookfield Synchro-Lectric Viscometer," 8-page, illustrated booklet. Brookfield Engineering Laboratories, 002 Porter Street, Stoughton, Mass.

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"New Duraplex C-57 Resin to Improve Trade-Sales Enamels." Information sheet. Resinous Products Division, Rohm & Haas Company, Philadelphia, Pa.

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"Catalog 15. Thermometers, Psychrometers, Barometers, Hydrometers." H-B Instrument Company, Inc., Philadelphia 25, Pa.

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"Denver 'Sub-A' Flotation." Bulletin No. F10-B29. Illustrated catalog. Denver Equipment Co. 1400 17th Street, Denver 17, Colorado.

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"Esters of Glycerol, Glycols, and Polyglycols," 24-page brochure. Available from Glycol Products Company, Inc., 26 Court Street, Brooklyn 2, N.Y.

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"New 6-inch Duplex Type All-Metal Log Log Slide Rule with 16 Scales." Information sheet. Pickett & Eckel, Inc., 5 S. Wabash, Chicago 3, Ill.

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"Tin and Its Uses." No. 20. 16 pages, illustrated. Available without charge from Tin Research Institute, Fraser Road, Greenford, Middlesex, England, or from the Tin Research Institute, Inc., 491 West Sixth Avenue, Columbus 1, Ohio.

# Condensates

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## National Council Meeting

The next meeting of the National Council, A.I.C., will be held February 8, 1950, at The Chemists Club, New York, N.Y.

## AIC Annual Meeting

The Annual Meeting, AIC, will be held May 11th and 12th at the Hotel New Yorker, New York, N.Y. Dr. Walter J. Murphy, F.A.I.C., will be presented with the 1950 Gold Medal of the Institute. Speakers will include Dr. Raymond E. Kirk, vice president, AIC, and Dr. Charles Allen Thomas, F.A.I.C., executive vice president, Monsanto Chemical Company. Dr. Maurice J. Kelley, F.A.I.C., of Nopco Chemical Company, Harrison, N.J. is chairman of the Committee on Arrangements.


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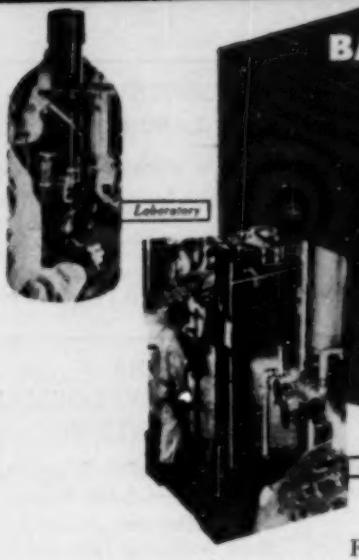


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